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THE GREAT SEA-SERPENT.

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It is impossible, however, to treat this laborious work as a scientific treatise, nor will the author, we trust, be vexed with us when we add that it is the very last form of a work that we would have expected from the pen of the learned Director of the Zoological Gardens at the Hague. for when one gets by practise to know the utter worthlessness of the descriptions given by even well-educated persons of often the most easily diagnosed forms of life—and surely experience of this nature must often have come across Dr. Oudemans's path—one cannot fail to regard as positively hopeless the reconciling of a mass of such crude observations as fill the pages of this book. The very trouble and no doubt anxiety caused by reading over such a pitiful series of records has to some extent affected the author, for he quotes as the motto for his volume the extremely sensible words of a very able biologist, whose chief fault it was not to leave a greater record of his wisdom for posterity, to the effect "That it is always unsafe to deny positively any phenomena that may be wholly or in part inexplicable," meaning thereby to deny a phenomenon because it cannot be explained, and then in the immediately following preface he compares himself to Chladni, who took the trouble to collect all the accounts concerning observations of "meteoric stones," and showed the immense [illegible] of *facts* that he had found out about them. In one word fact—*fact*—lies a great world of diff[erence] between Chladni's meteoric stones and Oudema[ns's] serpents. The meteoric stones could be seen handled, the sea-serpents "are very shy, and it advisable to approach them with a steamboat." "I[nstan]taneous photographs of the animal will alone co[n]vince zoologists, while all their reports and pencil dr[awings] will be received with a shrug of the shoulders." latter sentence, which precedes the preface, may shudder at the amount of "reports and pencil draw[ings] contained in the six hundred following pages.

And yet, perhaps, this work is not altogether w[ithout] its value. From the middle of the sixteenth century [when] Olaus Magnus wrote about "a very large serpe[nt] length of upwards of 200 feet and twenty feet in di[ameter] which lived in rocks and holes near the shore of [Norway] —until this very present hour all sorts and [kinds] of gigantic forms have been reported ab[out] sailors and others, and even pencil drawings of [them] have been made, and the collecting together and p[ublication] of such a series of records forms as strange a ch[apter] the science known by the people as has ever m[ade] appearance.

There is but little necessity of insisting on the [want] of experience in seeing ere one can describe w[hat is] seen, nor on the need of a power of des[cription] what one correctly sees so that the description [may] be applicable, nor need one wonder that such [want] of seeing and describing were not to be found in the many seagoing worthies whose extra[ordinary] narratives crowd the pages of this volume. But are we to say about the capacity for be[ing] be found in the compiler of this work, who [con]cludes his task by naming a form he has never *Megophias megophias* (Raf.) Oud., and further that a Phylogenetic table, which he gives, "[will] practical manner show the rank which, in my o[pinion] sea-serpents occupy in the system of nature"?

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ric furnace. When the metal fuses it gets saturated with carbon, forming a carburet mixed with free carbon, which after solidification exists in the form of swelling or true graphite. It is separated by aqua regia. The residue consists of slate-grey hexagonal crystals of density 2·06 to 2·08, burning in a current of oxygen at 575°. From 400° upwards it swells like mercury sulpho-cyanide. It is not attacked by fused nitrate of potassium, chromic acid, or hot sulphuric acid, but is rapidly attacked by warm iodic acid and fused sodium carbonate. The swelling up is attributed to the sudden liberation of heated gas due to the decomposition of a very small quantity of graphitic oxide produced under the influence of nitric acid at the expense of a trace of amorphous graphite mixed with the crystallised variety, and more easily attacked than the latter.—Researches on samarium, by M. Lecoq de Boisbaudran.—The pancreas and the nerve centres regulating the glycemic function; experimental demonstrations derived from a comparison of the effects of a removal of the pancreas with those of bulbary section, by MM. A. Chauveau and M. Kaufmann. Medullary section, preceded or followed by bulbary section, produces exactly the same effects as medullary section preceded or followed by the removal of the pancreas. As regards, therefore, the physiological action exerted upon the sugar-forming apparatus, this last operation behaves exactly like the bulbary section. Now the latter determines the super-activity of the liver by suppressing the transmission of the influence of an inhibitory centre situated in the medulla oblongata. As a necessary result, the removal of the pancreas acts in an analogous way in producing hyperglycemia and glycosuria. This operation amounts to the annihilation of the centre controlling the glycogenic function. Hence the pancreas acts upon this function by exciting the activity of this inhibitory centre, and probably also by influencing the exciting centre, which is, on the other hand, checked in its activity by the products of internal pancreatic secretion poured into the blood. The results of the whole experimental investigation on the pathogeny of diabetes are embodied in sixteen propositions.—On the distribution in latitude of the solar phenomena observed at the Royal Observatory of the Roman College during the fourth quarter of 1892, by M. P. Tacchini.—Photography of the solar corona apart from total eclipses, by M. George E. Hale.—On electric waves along fine threads; calculation of the depression, by M. Birkeland.—On initial capacities of polarisation, by M. E. Bouty.—Influence of frequency upon the physiological effects of alternating currents, by M. d'Arsonval.—Measurement of large differences of phase in white light, by M. P. Joubin. A new method of rendering visible the fringes produced by two interfering systems of waves consists in placing an anisotropic compensator upon both the groups which have traversed the interference apparatus. This compensator then receives polarised light which, before being analysed, passes through a plate of quartz with its principal section at an angle of 45° to the plane of polarisation. Such an arrangement has been carried out in one of Fizeau's apparatus for measuring expansions. It reads direct to $\frac{1}{10}$ of a micron.—On spherical aberration of the human eye; measurement of senilism of the crystalline, by M. C. J. A. Leroy. The mean aberration is a function of the age which grows slowly in young people and very rapidly after mature age, tending towards a maximum in old age. The spherical aberration of the eye also depends principally upon the crystalline and notably upon the variability of its index of refraction. In young people this variability is rapid enough to sensibly correct the aberration. It decreases with age, and tends to a limiting value which it would have if the crystalline had a uniform index throughout.—Electrical crucible for the laboratory, with directing magnet, by MM. E. Ducretet and L. Lejeune.—On a phenomenon of dissociation of sodium chloride heated in presence of a wall of porous earth, by M. de Sanderval.—On hydurilic and desoxyamalic acids, by M. C. Matignon.—Action of cotton upon sublimate absorbed in dilute solutions, by M. Léo Vignon.—Influence of the alkalinity of blood upon the process of intra-organic oxidation provoked by spermine, by M. Alexandre Pœhl.—Production of sugar diabetes in the rabbit by the destruction of the pancreas, by M. E. Hédon.—Improvement of potato-culture for industrial and forage purposes in France, by M. Aimé Girard.—On the employment of ruthenium red in vegetable anatomy, by M. Louis Mangin.—Permian fish fauna in France, by M. H. E. Sauvage.—On the manifestation, for more than six hundred years, of sudden variations of temperature on fixed dates during the second fortnight of January, by M. Dom D. Démoulin.—Destruction of trees and public health, by M. J. Jeannel.

BRITISH MUSEUM 10 APR 93

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Laws and Properties of Matter: R. T. Glazebrook (K. Paul).—British Fungus Flora, vol. 2: G. Massey (Bell).—Text-book of Comparative Geology: Dr. E. Kayser, translated and edited by P. Lake (Sonnenschein).—Beiträge zur Biologie und Anatomie der Lianen. Zweiter Theil:—Beiträge zur Anatomie der Lianen, Dr. H. Schenck (Jena, Fischer).—Œuvres Complètes de Christian Huygens, vol. 5 (La Haye, M. Nijhoff).—Statistics of the Colony of Tasmania, 1891 (Tasmania).—Meteorological Observations made at the Adelaide Observatory, &c., 1890 (Adelaide).—Lehrbuch der Entwicklungsgeschichte des Menschen und der Wirbelthiere, Dr. O. Hertwig (Jena, Fischer).—Topographische Anatomie des Pferdes. Erster Teil:—Die Gliedmassen: Drs. Ellenberger and Baum (Berlin, P. Parey).—Distribution de la Vapeur: A. Madamet (Paris, Gauthier-Villars).—Le Lait: P. Langlois (Paris, Gauthier-Villars).—Universal Atlas. Part 25 (Cassell).

PAMPHLETS.—Diagrams of Isothermal Lines of New South Wales.—Hail-storms: H. C. Russell.—Das Genetische System der Chemischen Elemente: W. Preyer (Berlin, Friedländer).—Further Studies of Yuccas and their Pollination: W. Trelease (St. Louis, Mo.).—Museums Association, Report of Proceedings, &c., at the Third Annual General Meeting.—The Negro in the District of Columbia: E. Ingle (Balt.).

SERIALS.—Memoirs and Proceedings of the Manchester Literary and Philosophical Society, vol. 7, No. 1 (Manchester).—Journal of the College of Science, Imperial University, Japan, vol. v., part 3 (Tōkyō).

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WE are glad to hear that Mr. J. J. Wild, Ph.D., who accompanied the *Challenger* as secretary to the Director (Sir Wyville Thomson) and artist to the Expedition, is settled in Melbourne, Victoria, where he is engaged in producing plates illustrative of the zoology and palæontology of the colony, under the direction of Sir Frederick MacCoy, F.R.S. He is at present figuring the fossil remains of Acanthodian fishes discovered in the Old Red Sandstone of Mansfield, Victoria.

THE programme of the first series of summer excursions of the Manchester Field Naturalists' Society has just been issued. Mr. Leo Grindon, the founder of the Society thirty-two years since, has been compelled, by advancing years and impaired health, to resign the presidential chair, which Mr. Chas. Bailey has undertaken to occupy. Mr. Grindon retains the office of botanical referee, with the assistance of Mr. W. Gee, who is engaged in teaching natural history subjects under the Science and Art Department. A special study, appropriate to the season and locality, is appointed for each meeting; and a field card, directing observation in each of the seven sections of the Society, is in preparation. A course of lessons, treating in detail of the leading natural families of the Manchester Flora, is being given in the city.

AT the meeting of the Royal Statistical Society on Tuesday, Mr. R. Henry Rew read a valuable paper on the statistics of the production and consumption of milk and milk products in Great Britain. The subject, as he pointed out, is one of extreme complexity. The effective production of milk by a single cow ranges from *nil* (in the case of a cow which only rears her calf) to 1200 gallons or more. The number of cows and heifers returned in 1890, the year taken as a basis for calculation, was 3,956,220, of which it is reckoned that 3,544,575 are productive. Returns now collected from a large number of districts, together with other data, justified an estimate of 400 gallons per cow, making the total quantity of milk available for consumption in various forms in the United Kingdom 1417 million gallons. The number of cows has decreased in proportion to population. In Great Britain there were in the period 1866-70 82·1 cows per 1000 of population, while in 1886-90 there were only 77·9. The absolute number of cows had increased, but not sufficiently to keep pace with the growth of population. The latest return (for 1891) is more encouraging, showing as it does the largest number of cows on record. In Ireland the period 1886-90 showed a higher proportion (290·8) of cows to population than in any of the four preceding quinquennial periods, but this was due not to an increase in the number of cattle, but to the decrease of population. The 1417 million gallons of milk produced in the United Kingdom is thus accounted for:—Consumed as milk 570 million gallons; butter, 617 million gallons (representing 105,000 tons of butter); cheese, 224 million gallons (representing 100,000 tons of cheese); miscellaneous (condensed milk, &c.), 6 million gallons. Mr. Rew admitted that the results arrived at were only tentative. He expressed a hope that before long some official help might be given in the solution of a problem which was of the deepest interest to statisticians, agriculturists, and social economists.

THE Bath and West of England Society decided some time ago to appoint a research chemist to make investigations upon the making of cheddar cheese. Mr. Fred. Jas. Lloyd was chosen to fill this post, and he has recently presented his report of the work done in August, September, and October of last year. The results obtained, though by no means complete, are both valuable and interesting, and it is to be hoped that the Society will continue and extend the work. The experiments were made at the Society's Dairy School, near Frome, and it was found possible to make a cheese in such a way as to be guided in judging the condition of the curd by determinations of acidity alone. The product was a decided success in every respect. The average acidity of the mixed milk before adding rennet was ·24 per cent., but on setting the whey only showed ·16 per cent. of lactic acid. It was proved, by continued experiment, that when the whey showed a percentage of acidity slightly greater than that in the milk before renneting the process was sufficiently advanced to draw off the whey and pile the curd. Determinations of acidity in the later stages of manufacture have yielded similar results, and it appears to be certain that the careful development of definite amounts of lactic acid at definite steps in the process is essential to success. The bacteriological observations show that, although very many organisms are liable to get into the milk, the majority of them are not able to exist in an acid material, consequently by insuring a proper development of acidity in the curd we destroy their activity, which would otherwise spoil the cheese. Not only does the *Bacillus acidi lactici* play the most important part in the making of the cheese, but it is also the chief agent in the ripening process.

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As to the *facts*, which may be—it is well to note—"*inferred from what is reported*," we find enumerated among them the external characters of the sea-serpent, its dimensions, form, and skin. Of its internal characters "it is not astonishing that we don't know much," yet it is clear "that if the animal opens its mouth there

is an opportunity to learn something about its teeth, tongue, &c.," and so we get a series of "inferred" facts about them. We have further details of its colours, sexual differences, a very full account of its "physiological characters," some of its "psychical characters," concluding with its enemies, its repose, its sleep, and its death.

Enough has been written to prove that this volume is not without a certain amount of interest. We have found it a rather troublesome task to read it through, but to open its pages at random one is sure to be arrested by some startling phase of belief or by some marvellous narration, and the first half of the book very certainly deserves to be described as a conscientious compilation. It is written in most excellent English.

PUBLIC HEALTH.

A Treatise on Public Health and its Applications in Different European Countries. By Albert Palmberg, M.D., Medical Officer of Health for the County of Helsingfors in Finland. Translated from the French edition, and the section on England edited by Arthur Newsholme, M.D. (Lond.), D P.H., Medical Officer of Health for Brighton. (London: Swan Sonnenschein and Co., 1893.)

ALTHOUGH scarcely more than a year has elapsed since the issue of the Swedish edition of this work, translations of it have already appeared in French, English, and Spanish. A book which within so short an interval has attained to such a pitch of popularity may be admitted to have practically established its claim to rank amongst the important contributions towards the literature of the subject with which it is concerned. Extensive indeed as is the ground travelled over by the author, yet so ably has the material been handled, that we feel it to be a matter for regret that the writer was unable to deal with the hygienic administration of all, instead of a portion only, of the important European countries. The sanitary administrations of England, Scotland, France, Germany, Austria, Sweden, and Finland are detailed; but the description of the Public Health service of Russia, Denmark, Norway, Holland, and Italy is omitted. Not having visited these countries, and studied the subject by a personal inquiry on the spot, Dr. Palmberg very wisely preferred not to deal with them at all, rather than run the risk of making inexact statements concerning them.

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France, the author informs us, has no general sanitary law, most of the sanitary regulations in force consisting of ministerial decrees, orders of prefects and councils of health. Corresponding to this laxity of sanitary control, the great sanitary improvements which have been from time to time introduced have not been followed in Paris by a continuous fall in mortality, as in the case of the other European capitals. As the author very rightly remarks, the time is past when it can be supposed that good sense and administrative capacity merely suffice for the regulation of the Public Health. The drainage of Paris is exhaustively treated, the sewerage of the town being dealt with in detail, the writer in the course of his description pointing out that the system in use is objectionable, inasmuch as it allows deposits of sand to occur, and necessitates the maintenance of an army of 850 men to keep the sewers clear, the workers themselves at the same time having a relative mortality from typhoid fever twice as great as that for all Paris. Moreover, owing to the friction of the enormous deposits of sand in the sewers the wear and tear on the latter are great, and compel frequent repairs.

The sanitation of Germany and Austria is dealt with in the same thorough spirit as pervades the rest of the book and calls for no special remark.

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"meteoric stones," and showed the immense num... of *facts* that he had found out about them. In ... one word fact—*fact*—lies a great world of differ... between Chladni's meteoric stones and Oudeman's ... serpents. The meteoric stones could be seen ... handled, the sea-serpents "are very shy, and it is ... desirable to approach them with a steamboat. "In ... taneous photographs of the animal will alone con... zoologists, while all their reports and pencil draw... will be received with a shrug of the shoulders"; ... latter sentence, which precedes the preface, makes ... shudder at the amount of "reports and pencil draw... contained in the six hundred following pages.

And yet, perhaps, this work is not altogether wit... its value. From the middle of the sixteenth century ... Olaus Magnus wrote about "a very large serpent ... length of upwards of 200 feet and twenty feet in diame... which lived in rocks and holes near the shore of Nor... —until this very present hour all sorts and man... of gigantic forms have been reported abou... sailors and others, and even pencil drawings of t... have been made, and the collecting together and prin... of such a series of records forms as strange a chapte... the science known by the people as has ever mad... appearance.

There is but little necessity of insisting on the ... of experience in seeing ere one can describe wh... seen, nor on the need of a power of descr... what one correctly sees so that the description ... be applicable, nor need one wonder that such ... of seeing and describing were not to be found ... in the many seagoing worthies whose extraor... narratives crowd the pages of this volume. Per... are we to say about the capacity for belie... be found in the compiler of this work, who ... cludes his task by naming a form he has never ... *Megophias megophias* (Raf.) Oud., and further t... that a Phylogenetic table, which he gives, "will ... practical manner show the rank which, in my o... sea-serpents occupy in the system of nature"?

This volume contains an account of the "literatur... the subject of sea-serpents; a detailed record ... various accounts and reports concerning observation... sea-serpents chronologically arranged and thor... discussed: and criticisms on the papers written ... same subject; next the various explanations ... given, and lastly the author's own conclusions—th... divides into "fables, fictions, exaggerations and ... and what he is pleased to call "facts." Among t... tions he regards the belief that the sea-serpent ... its skin, as common snakes do, and that it is ... land"; among the exaggerations that it has "a ... a hundred and fifty feet in length"! among th... "that there are *two* species of sea-serpents, or th... are several species of them all belonging to the ... genus"; or that "it ever takes [mistakes] a boat ... of the other sex."

As to the *facts*, which may be—it is well to ... "*inferred from what is reported*," we find enu... among them the external characters of the sea-... its dimensions, form, and skin. Of its interna... ters "it is not astonishing that we don't know ... yet it is clear "that if the animal opens its mouth ... is an opportunity to learn something about its teeth, tongue, &c." and so we get a series of "inferred" facts about them. We have further details of its colours, sexual differences, a very full account of its "physiological characters,' some of its "psychical characters," concluding with its enemies, its repose, its sleep, and its death.

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and Papers" from *Paradise Lost*, where the great leviathan is mentioned as being the special dread of the Norwegians (the coast of Norway being the favourite haunt of the monster according to the most reliable eye-witnesses). But why is Coleridge left out?

"Beyond the shadow of the ship,
I watched the water snakes.
They moved in tracks of shining white,
And when they reared the elfish light
Fell off in hoary flakes."

Later on, we come upon another picture of a sailor being cut off in his prime by the wily monster, and we pass on with considerable relief to Dr. Oudemans' "Conclusions," where, under the headings of "Harmlessness, Timidity, and Playfulness," we learn that the great sea-serpent is, after all, a mild creature, a conviction probably deduced from the fact that, if the great sea snake has ever shown his animosity to the unwary invaders of his haunts, no victim has, so far, survived to tell the tale.

It is sad, however, to find that Dr. Oudemans' great sea-serpent is, after all, only a monster sea-lion, and we don't know of his having done anything to justify Dr. Oudemans' calling him *Megophias megophias* (Raf.), Oud.

L. B. P.

HANDBUCH DER PALÆONTOLOGIE.—Palæozoologie, vol. iv., pt. i. Edited by K. A. Zittel. 8vo. Pp. 304. Illustrated. Munich and Leipsic: R. Oldenbourg, 1892.

WE are glad to congratulate Professor Von Zittel on the untiring energy which has enabled him to get well into the Mammals in the present fasciculus of this magnificent and invaluable work. It need hardly be mentioned that the whole of the Vertebrate portion of the work has been written by the Editor himself; and the present fasciculus is fully equal to its predecessors in the care and attention

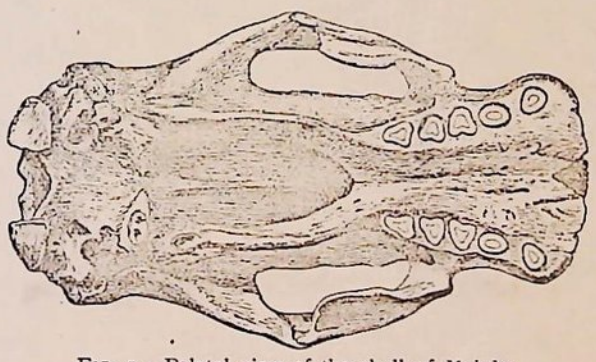

FIG. 1.—Palatal view of the skull of *Mylodon*.

which has been bestowed upon it, and in the excellence of the illustrations. Three of the latter we are enabled to reproduce as samples. We are especially glad to notice that the author has devoted particular attention to the recent important discoveries which have been made among the fossil mammals of South America, and that a host of new forms have been assigned to their proper serial positions. This is the more creditable to the author, seeing that owing to unfortunate circumstances the vertebrate palæontology of that country

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mode of life, of the Black Vulture, the Upland Goose, and the Crested Tinamou, as well as of several of the smaller birds. Perhaps the most generally interesting chapter in the whole book is that on "Bird-music," in the course of which the author points out how impossible it is to convey any adequate idea of the songs of birds by mere description. He illustrates this by mentioning that before he had ever visited England he was anxious to obtain some idea of the nature of the melody of the British songsters, but that all his efforts were in vain. And the description of his delight at first hearing the music of our English fields and groves ought to remind us all how little we really appreciate, as a rule, the natural charms of our own land. Possibly some further development of the phonograph may be the ultimate means by which "Bird-music" may be rendered comprehensible to those who cannot hear it at first hand, as we greatly doubt if this can ever be effected by any merely graphic method.

Of scarcely less interest is the author's description of the ways of the leaf-bearing ants, on pp. 140–141; while those whose special study is Mammals will not fail to notice the observations on the burrowing Tuco-tuco (*Ctenomys*) and the Mara (*Dolichotis*). As the author well remarks, it is very curious to find in a burrowing animal the eyes of so large a size as they are in the former of these two rodents.

In commending this book to the attention of our readers, we may express a hope that it will ere long be followed by others from the same ready pen.

R. L.

THE GREAT SEA-SERPENT: An Historical and Critical Treatise. With the reports of 187 appearances (including those of the appendix), the suppositions and suggestions of scientific and non-scientific persons, and the Author's conclusions. With 82 illustrations. By A. C. Oudemans, Jzn. Published by the Author, October, 1892. London: Luyac & Co.

Of this work we give two reviews, the one by a naturalist, the other by a literary contributor.

I.

THE author in his preface compares his work with that of Chladni on meteoric stones. Chladni, he says, opened the eyes of unbelievers by collecting and comparing all accounts of meteoric stones up to the nineteenth century. Meteoric stones were again found and were proved to be quite different from terrestrial stones. Unfortunately for the argument, remarkably few sea-serpents have been caught, and those few have proved to be not at all different from well-known objects.

We confess to have found Oudemans' book exceedingly dul reading. 379 pages are devoted to genuine or invented accounts of various appearances; 110 to explanations hitherto given. No doubt it is useful to have the literature of the subject compiled, but the author might have contented himself with a much greater compression of the interminable newspaper discussions, evidence on oath of sailors and fishermen, and so forth. We do not see that he advances at all beyond Mr. Hoyle's bright and short account of the sea-serpent in the "Encyclopædia Britannica." A number of the records are pure myths; some others are due to mistaken observations of floating sea-weed; porpoises swimming in a row; basking sharks, and so forth. The persistent records from the Norwegian coasts are most probably explained by the existence of gigantic cuttle-fish; and there remains

a residuum which quite possibly may be explained by the discovery of some new animal. Oudemans' own theory is given with a considerable amount of confidence, in some 50 pages towards the end of the book, and on page 516 an ideal sketch of the animal is produced. It is a Pinnipede to be called *Megophias megophias* (Raf.), Oud.; and a phylogenetic table of its relations with other Pinnipedes, living and extinct, is given. It is very possible that a large Pinnipede may exist, but, on carefully going through the characters suggested for it by this author, it is difficult to see that he has been guided in his selection from reports by any sounder principle than relying on what appeared to suit his hypothesis, and rejecting or explaining away inconvenient ones. Further notice of this book I leave to a literary contributor.

P. C. M.

II.

THE attitude of the nineteenth century, social as scientific, towards the unknown may be summed up by the remark made by a lady member of the upper ten concerning those less happily situated in the social scale—"I don't know them: they don't exist." In the face of this attitude Dr. Oudemans has presented the public with a treatise of no less than 592 pages on our old friend the sea-serpent. We are warned on the title-page that the little volume contains reports of 187 appearances, "including those of the appendix," but we are not told what the appendix of the serpent is, and there are no special reports on appearances of his tail. The author much deplores the fact that his illustrations are not due to the unlying kodac. Nevertheless, the reader does not lose by this little omission in the baggage of observant travellers. It has been the means of providing portraits of the sea-serpent such as we feel assured no camera yet invented could have produced. The most impressive of these is one compiled by Messrs. Renard, *père et fils*, who combinedly took observations one moonlight night during a voyage on the high seas in 1881. The result is the portrayal of a dragon worthy the sublimest efforts of Sir Augustus Harris. We fancy even our own patron saint would have quailed before it, unless, indeed, following the advice given by Dr. Oudemans, he had armed himself with "explosive balls and harpoons loaden with nitro-glycerine." This particular specimen possessed not only teeth, "sharp, enormous, and white," but a phosphorescent tongue and an eye that looked backwards. Probably that eye also winked, for Dr. Oudemans includes both description and drawing under the heading of "Cheats and Hoaxes"—a section sternly dealt with at the beginning of the book. However, in the next chapter, entitled "Would-be Sea-Serpents," the illustrations are not to be outdone, in spirit and conception, by mere cheats and hoaxes, and in fig. 12, *Lineus longissimus*, Sow., we find something really worth looking at. Chapter iv. consists of reports and papers on the appearances of sea-serpents in various parts of the world. These are mostly compiled by naval officers, and a few—a very few—scientists. The Church, however, is not unrepresented, and we would not like to call in question the evidence of the Archbishop of Upsala, writing in 1555; but surely the Archbishop's illustration is the gem of the collection. The sea-serpent is depicted in the act of swallowing a sailor, and we can only charitably suggest that the original sketch was intended as a representation of Jonah's unfortunate experience. Among so much documentary evidence, it is difficult to discriminate critically. Even Milton is pressed into the service, quotations being given in "Reports

and Papers" from *Paradise*
mentioned as being the spe
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most reliable eye-witnesses).

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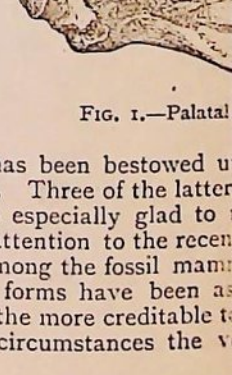

FIG. 1.—Palatal

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